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ABSTRACT

The relationship between language and education is considered, focusing on the central role of language in learning, and two kinds of research concerned with language and educational issues are discussed. Linguistic research focuses on the language aspects and treats the educational aspect as the contextual surrounding of the problem. Educational research focuses on the learning aspect of the problem and sees language as a variable that could explain the outcome. Differences between linguists and educational researchers' domains of interest reflect important differences in their initial assumptions and in how they interpret the evidence. A review of research in dialect variation, specifically Black English Vernacular, and its effect on academic achievement is reported from both a linguistic and educational approach. The application of linguistic issues to educational problems such as literacy, the effects of dialects on learning, how well teachers use the language, and how well students understand the language of instruction is highlighted, and research on language teaching, language proficiency and schooling, language proficiency assessment, and training is discussed. It is concluded that both educators and linguists can learn much from each other. (DJD)

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by

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LANGUAGE AND EDUCATION

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Preface:

As a linguist working in education I enjoy a special advantage. Educators generally do not know what linguists do, and most linguists are not quite sure what educators do. My colleagues in both worlds believe that I know something they don't know, and that it must be useful, even if it is not entirely respectable. This, of course, is an advantage I share with everyone who is trained in one discipline and works in another.

Since I have a job in education, I find myself being asked for advice, frequently enough, by soon-to-be-graduates of linguistics programs. What kinds of problems in education might be of interest to linguists? What are the chances of a linguist getting a job in education? Do I know of any education jobs coming up soon for specialists in the historical development of Albanian reflexives? In this paper, I will consider the first of those questions only.

Some Language Issues in Education:

Because of the centrality of language in learning, there are numerous language and education issues that come to mind. Among them are the following:

1. Much of what students learn in school is conveyed to them through talk, and the discourse structure of instructional events may be an important aspect of educational programs. To what extent does successful learning depend on how well teachers use language, or on the patterns of language behavior teachers promote in their classes?

2. In order to learn what they are supposed to learn in school, students have to understand the language of instruction as well as their teachers and the writers of their textbooks assume they do. Language understanding clearly figures in academic development and in knowledge acquisition. What level of linguistic knowledge is required to deal with the language used by teachers and textbooks at various grade levels?

3. Differences of language or dialect between the home and the school can greatly affect learning and participation in school activities. What are the language demands of school, and how do linguistic differences affect students' abilities to do what is expected of them?

4. Language continues to develop during the school years for any student. What role does instruction play in that development? How does literacy affect language development, and what are the developmental consequences of not becoming literate?

There are at least two kinds of research on these issues. One is conducted by researchers in fields such as anthropology, psychology, and of course, linguistics. The other is conducted by educational researchers. The two types are quite different in orientation. The linguist, for example, tends to focus on the language aspects of these questions and to treat the educational aspect as the contextual surround of the problem. The educational researcher focuses on the learning aspect of the problem, and sees language as a variable that might explain its outcome. The differences in perspective are such that the two groups sometimes have a hard time seeing the relevance of each other's work, even when both are dealing with the same phenomena. Because each kind of research concentrates on just part of the larger issue, the problem is addressed thoroughly in neither, and the findings are not entirely useful to practitioners who are looking to researchers for answers to these questions.

Differences between linguists and educational researchers in what they regard as their domains of interest reflect important differences in their starting assumptions, and in what they make of evidence too. This can lead to major opposition between the two views. I'll remind you of some well-known research as examples of this difference in approach and focus. The problem relates to dialect variation and its suspected effect on academic achievement.

An Educational Research Example:

In the 1960's and 70's, there was a general concern in the society that some groups did not do as well in school as others. Black children had greater difficulty than other children learning to read, and in making educational progress, and they left school sooner.

Language has long been believed to be paramount among the factors that might account for the educational problems of these children. A view held by many educators is that black children are cognitively handicapped because the language they speak is incapable of supporting careful thought. These educators take a normative view of language: standard English is the point of reference, the norm, and anyone who does not have it is regarded as abnormal.

That, in fact, was the starting assumption of a number of educational researchers who were trying to figure out how to improve the educational situation of black children during the "War on Poverty" period. Chief among them were Carl Bereiter and Siegfried Englemann, both then at the University of Illinois, who conducted research on the cognitive functioning of inner city black

children in the early 60's. In their investigations, they tested black children on their grammatical skills. Based on their tests, none of which the young subjects handled very well since they were being tested in an unfamiliar dialect and on unfamiliar turf, the researchers concluded that the children were seriously deficient in linguistic knowledge. An instrument designed by Englemann, called the "Cognitive Maturity Test", which "tests the child's ability to repeat sentences of various kinds and to answer questions using information contained in the sentences", led to the following picture of the language of the children they were studying:

> "The speech of the severely deprived child seems to consist not of distinct words as does the speech of middle-class children of the same age, but rather of whole phrases or sentences that function like giant words. That is to say, these "giant word" units cannot be taken apart by the child and re-combined; they cannot be transformed from statements to questions, from imperatives to declaratives, and so on. Instead of saying "He's a big dog," the deprived child says "He bih daw." Instead of saying "I ain't got no juice," he says "Uai-ga-na-ju." Instead of saying "That is a red truck," he says "Da-re-truh." Once the listener has become accustomed to this style of speech, he may begin to hear it as if all the sounds were there, and may get the impression that he is hearing articles when in fact there is only a pause where the article should be. He may believe that the child is using words like *it*, *is*, *if*, and *in*, when in fact he is using the same sound for all of them--something on the order of "ih". ...If the problem were merely one of faulty pronunciation, it would not be so serious. But it appears that the child's faulty pronunciation arises from his inability to deal with sentences as sequences of meaningful parts. (Bereiter and Englemann, 1966: 34-35.)

The children were unfamiliar both with the language of the university researchers, and with the interactional style in which the testing was conducted. Not surpisingly, they had difficulty responding to the questions that were put to them. The children's inability to deal with the language of the testing situation led Bereiter and Englemann to conclude that they were without grammar. Further, because the researchers assumed that linguistic functioning is closely linked to cognitive functioning, they made an unwarranted inferential leap. They concluded that their subjects, these young speakers of dialect, were both cognitively and linguistically deficient. According to these researchers, the black children's language and thinking were without structure and order. Thus, they were judged to be incapable of logical thinking and expression:

> "...culturally deprived children, lacking the most rudimentary forms of constructive dialog, are cut down at the very trunk of academic aptitude. Whatever they posses in the way of expressive language, even though it is also inadequate, serves only to cover a deficiency that is much more profound. ...As the preceding observations suggest, many disadvantaged

> children of preschool age come very close to the total lack of ability to use language as a device for acquiring and processing information. Language for them is unwieldy and not very useful. For some of them, speaking is clearly no fun, and they manage as far as possible to get along without it. Others enjoy social speech and use it a good deal in play and social intercourse, but seldom for purposes of learning or reasoning; their language, *as they use it*, is not adequate for these purposes." (Bereiter and Englemann, 1966: 39-40.)

Without massive intervention, Bereiter and Englemann concluded, these children would be doomed to failure. The researchers argued that given the seriousness of their twin deficiencies, black children were in need of heavy-handed remediation. The only way to save them was for someone to intervene--to build in them the logical connections that they lacked. The most efficient way to accomplish this was linguistic: through a highly structured program of verbal conditioning in which the children were drilled on patterns of this nature:

> This is a ball.
> This is not a dish.
> This is not a coin.
> This is not a balloon.
> This is not a globe.
> (Bereiter and Englemann, 1966: 143)

Serious research founded on such assumptions belong to the past, and few people in educational research see the problem now as Bereiter and Englemann did in the 60's. Yet there are still many practicing educators whose understanding of the educational needs of linguistically different children is shaped by their work. The DISTAR curriculum which was the outgrowth of the Bereiter-Englemann research is still widely used in the schools. It is a highly structured program by which teachers, using behaviorist techniques, program children to provide correct responses to questions and elicitation prompts. DISTAR relies heavily on oral drills, in which grammatical structures believed necessary for expressing "logical" relations are taught in isolation from their real-world uses. It is used as a remedial program for minority group children and for underachieving students. It is even used to teach English as a second language to non-English speakers.

In a series of studies, a group of Texas and Oregon educational researchers (Gersten, 1985; Gersten and Woodward, 1985) investigated the effectiveness of DISTAR as the curriculum in a programmatic approach which they claim is more effective than bilingual education for teaching language minority students English. As in the Illinois work, the home languages of the subjects in the Gersten and Woodward studies were not recognized as a valid linguistic foundation for their educational development. Their approach, the so-called "structured immersion", is basically a sink or swim method (Santiago, 1985). Students are taught English through DISTAR, this constituting a substantial part of their program.

A Linguistic Research Example:

All too often one finds that speakers of stigmatized dialects of languages come to think about their language as inadequate or lacking in structure or refinement. It is common for speakers of a language which lacks publicly available printed grammars to believe that their language "has no grammar". University students from so-called third world countries are surprised to learn that the campus library contains grammars of their languages. "It never occurred to me"--a very bright African student in Berkeley recently said--"that my language actually had rules."

It is not only the speakers of the less well-known languages, or speakers of minority dialects, who believe that their languges are characterized mainly by disorder; the speakers of the majority language share that assumption. The non-standard speech of many Black Americans was assumed for many years to be structureless and unregulated. (Feelings about this matter are so strong that a politically neutral name for what I have been referring to as black dialect does not exist: Black English, black dialect, Black non-standard vernacular and Ebonics are among the choices.) It was believed for a very long time that being limited to what was taken to be such a structureless vehicle of thought and expression would have long-lasting consequences on one's cognitive life, and that strong remedies, applied early, were called for. This, of course, was the impetus and reasoning behind research programs such as Bereiter's and Englemann's.

Black dialect, however, also invited the attention of members of the linguistic research community. The work of William Labov (1972) and of a team of researchers connected with the Center for Applied Linguistics (CAL) in Washington, D. C. (Stewart, 1964; Labov, 1966; Fasold and Shuy, 1970; Wolfram, 1969; Wolfram and Clarke, 1971), demonstrated a roster of regularities, subtleties and internal logic in Black English which made it clear that this language had all the features that can be expected of any language. Careful and sensitive observations on the discourse of speakers of Black English were recorded showing young children effortlessly producing sentences in a natural setting, which had a complexity that could not be elicited by school pyschologists in the testing room. Particularly telling were cases of children, while waiting to be tested, expressing complaints about having to endure such tests, in sentences exhibiting the logical and grammatical complexity that the tester was about to prove them incapable of producing!

This research had a far-reaching impact on educators who were uncomfortable with the discrepancies between the other kinds of research findings on black children, and their own observations of what these same children could do. It is interesting to note, however, that while everyone seemed relieved to learn through Labov's research and through the work done at CAL that Black Dialect is in fact a real, honest-to-God language, with a grammar and all the trimmings, this was hardly an issue from the linguist's perspective.

Now let us consider how these research findings were applied in educational practice. The outcome of the Bereiter-Englemann research was an intervention program and the eventual publication of a set of curriculum materials which, for better or worse, have been used for teaching linguistically different children throughout the country for the past 20 years. Let's consider what happened to the finding that dialect speakers speak a bonafide language which, although different from Standard English, is nevertheless perfectly good, and should be respected. This realization led to a brief, but interesting piece of social and educational experimentation. Based on this research, some sociolinguists came up with the idea of producing educational materials in dialect for dialect speakers (Baratz and Shuy, 1969; Wolfram and Fasold, 1969). The rationale for doing so seemed reasonable enough. The differences that exist between standard and Black English may well be a major source of difficulty for dialect speakers in learning to read. To make reading easier for them, why not teach them in the language they already know and speak, and then, once they have learned how to read, help them transfer the skill to materials that are written in the standard language? It made perfectly good sense--this in fact, is the rationale behind bilingual education. Learning to read is one thing; learning a new linguistic system is another. Children should not be handicapped by having to do both at the same time.

The problem here was that things were not so simple. The effort met with enormous opposition, not from the educational establishment, but from the black community itself: its leaders, the students' parents, and the students themselves. The black community rejected it for powerful social reasons. Black English was, and is, a spoken vernacular. Those who speak it see its proper function as a means of informal discourse for use with family members and friends, and with other member of the black speech community.

A study by educator Mary Hoover (1978) revealed that Black English speakers have a refined sense of appropriateness as to when the vernacular rather than a "standard variety" of the dialect can or should be used. One can use it for informal communication between familiars or family members, but <u>not</u> in formal settings such as at church, or on ceremonial occasions. One can use it for talking to one's siblings and friends, but <u>not</u> for writing notes to one's teacher, or to one's grandmother. Most importantly, no one regarded it as appropriate for teachers to use in school, or in printed texts to be read in school. The dialect reader experiment failed because such materials and their use in school represented, in the eyes of the members of the speech community, a serious violation of a rule of appropriate use. So where does that leave the practitioner who works with dialect speaking students? While there has been some progress over the past 20 years, the problems remain much the same as before. Dialect speakers still fail in unacceptably large numbers, and their teachers continue to look for ways to help them. They suspect that language is the problem even though they understand that black students have rule-governed language, equivalent in expressive and communicative power to

Standard English. There is much to be done in this area, but not necessarily in the way that things have been done in the past.

Some Educational Issues for Linguists:

Let us consider several linguistic issues that figure in education. These relate to problems that are closer to my own research interests. Aside from my familiarity with them, they are relevant to this discussion because in each case, educators have tried to apply the results of linguistic research, but not always with good results.

Language teaching: The first issue relates to second language learning and teaching. Investigations of second language learning in school age children have given us a fairly complete picture of what is involved in learning languages after the first, and of the factors that influence this process. For example, it is clear that the kind of language learners hear, and the kind of practice they get using the new language, can affect its learning. Studies of input by applied linguists (e.g., Varonis and Gass, 1985; Long, 1983 & 1985; Scarcella and Higa, 1981; Chaudron, 1982 & 1983) have shown that speakers of the target language play a non-trivial role in language learning. Language learning may, in fact, be as much a social process as it is a cognitive one.

Evidence from work done by Swain (1985) in Canada and Sharwood Smith (1985) in the Netherlands provides us with an even more subtle picture of the process than we get by looking simply at input. The meaningfulness of the input is all important, but it is not the sole responsibility of the providers of the input to make it so. Instead, learners through their efforts to use the new language, discover how the language works as they notice the communicative effects that their efforts have on their speech partners.

What we know about the process is that learners have to work at learning, not simply because they want to learn the language, but because they need or want to communicate with people who speak it. If there is no reason to do so, there is no incentive to engage in the necessary cognitive work--remembering, figuring out, sorting, and relating and matching--that eventually results in their learning the language. After 15 years of research, we are getting to the place where applied linguists can say something useful to educators about how to help people learn new languages.

Little of that, however, is reflected in foreign language or English as a second language (ESL) teaching programs. In fact, if one examines even quite recent instructional programs or materials, one finds that they are largely based on views of language teaching that are completely unrelated to what we know about language learning. We know that language is learned best when it is fulfilling some sort of real communicative purpose, but in most language programs, no matter how they are described, linguistic materials are taught in isolation and out of context. Or, the

context that is provided (usually in the form of picture cards and the like) adds up to little more than something to look at while patterns are being recited. The chief pedagogical approach is the regulated drill on isolated linguistic phenomena or patterns--very often based on a long abandoned version of linguistic theory. The reader will be interested to know that grammatical notions such as classical transformations have not been relegated to the scrap-heap of discarded theories--they are fully preserved in foreign language and second language textbooks. (It should be noted that what one finds is not the generativists' transformations, exactly, but a popularized version of them according to which they represent processes for converting fully specified surface sentences of one type into sentences of another type.) An examination of the so-called "essential elements" for ESL--those curriculum guidelines that state educational agencies put out to guide the development of educational programs and materials--list things that are relics of the flaming youth of linguistic theory: kernel sentences, wh-question transformations, negative transformations, etc. In fact, an examination of most ESL materials will show that not only do these things appear in the curriculum, they frequently provide its basic structure.

The history of the importation of linguistic ideas into educational settings is not a glorious one. The substitution-in-frames technique for classifying words led to Pattern Practice, one of the best examples of the doctrine that one can profit from intensive experience with a language independently of having anything to say or caring what somebody else has to say. The earliest version of transformational grammar caught on quickly in educational circles. Generations of of learners and teachers kept themselves busy transforming sentences from one shape into another, perhaps believing that this is the essence of grammar. The notion of the kernel sentence, from that era in linguistics, remains current in the talk and thinking of language educators, and in the published curriculum guidelines of many states. Current theories of Universal Grammar are perhaps safe from instant classroom applications, for the excellent reason that they deal with what is innately known, not what gets learned. There is, however, much speculation on how learning environments can be designed so as to facilitate parameter setting.

Language proficiency and schooling: The second topic concerns the language abilities needed for academic development. Linguists assume that by age 5 to 7, children will have mastered the grammar of their native languages-- although there remains a few grammatical odds and ends that still have to be sorted out. Educators have generally bought that idea, and they operate on the assumption that the native language skills that students display in or about their sixth year of life represent the mastery of the language that is necessary for literacy development. Children's ability to understand what is going on in the classroom, and to make themselves understood are taken as prima facie evidence that they have the knowledge of the language which is assumed on their part. This may be well and good where native speakers are concerned, and especially so when those native speakers have had

the set of language experiences presupposed by the school. It is not so fine when the student happens to be a non-native speaker of the language.

For second language learners, the process of learning a new language may take fully as long as it took to master the first language. There is evidence from research in the United States (mine, for example) and in Canada (that of Swain, 1985, and Cummins, 1981) that suggests that it takes at least 5 to 7 years for learners to achieve the level of control over a second language that children typically have in their first language by the time they enter school. Cummins (1979) argues that language ability may comprise two quite distinctly different levels of skills and knowledge. One, the kind involved in ordinary social interaction, is relatively easy to pick up, and children can become reasonably proficient in this kind of language in a year or two. The other kind, namely the language abilities and skills that figure in higher order cognitive functioning, and in academic development, takes much longer to master. It is that level of control that children need in order to participate fully in school, and to get out of their educational experience what the school expects them to learn. Such abilities develop over time. Native speakers have been at it for a while so that by the time they reach school they are more or less ready to deal with literacy. Unfortunately, many people believe that the non-native speaker's ability to use the language socially reflects the language development of a native speaker, and that as soon as they can use it that well, they are on a par with native speakers of the same age. Acting on that assumption, educational policy-makers try to eliminate linguistic support services for non-native speakers of English as soon as they know enough English to get along socially in school. Opponents of bilingual programs and ESL programs insist that language minority students are kept in them far longer than is necessary--with the result that they never become linguistically independent. It is crucial for linguists and educational researchers to work together to establish the level of language that is needed for academic development at different grade levels, and to establish criteria for determining when children can handle the language demands of school.

Language proficiency assessment: This leads me to the next area in which linguistics figures prominently in an educational issue--namely the question of language proficiency assessment. This is an topic of concern to educators and educational policy makers who deal with the needs and rights of language minorities in the society. The law says that if children do not know English well enough to profit from instruction given in that language, then the school has got to provide them with linguistic assistance (either in the form of native language support, or help learning English as a second language). In order to determine who should get such assistance, and for how long, schools throughout the country are required by law to assess the language proficiency of all students who may be less than fully proficient in English.

Such assessments depend on the existence of standards for the linguistic abilities and skills that are needed for school participation at different grades. No such standards exist, however. Nevertheless, there is an abundance of tests which are used for the purpose of assessing linguistic proficiency at various levels, most of them based on nothing that linguists would regard as valid criteria for such measures. Unfortunately language proficiency assessment is a field with no natural landmarks. What does one have to know in a language to order a meal in a restaurant, to insult a cabdriver, to talk through the proof of a mathematical theorem, to give an eyewitness account of an event, or to express aesthetic judgements? What kinds of tests could allow us to estimate a person's abilities in any of these areas? And what areas of competence should educators be interested in assessing? Linguists could contribute to the design of instruments for measuring language mastery. The language skills needed for school success could be characterized in terms of a quite specific set of rhetorical and grammatical patterns, together with resources of diction and lexicon that can be meaningfully sampled, once it is known what the linguistic demands of school are. I would like to see linguists join in a concerted effort to discover these and to estimate their importance--to the end of reforming the language testing industry.

Training issues--for linguists and for educators: The last major topic relates to training--in linguistics for educators and in education for linguists. Although this paper has, in the main, dealt with issues related to language differences in school, there are many more general issues. In fact, it is difficult to think of an area of educational research that does not, in some way involve language issues. It is clear that every school of education should have, on its faculty, one or more linguists who can provide the linguistic training educational researchers need in order to be sensitive to language issues in the problems they customarily work on. Educators and educational researchers need to acquire the kind of attitude that linguists have about language in order to understand its role in learning. But what kind of training do they need and by what kinds of linguists?

Since educators (especially classroom teachers) are constantly dealing with language, they ought to possess some level of reliable knowledge about it and how it works. Classroom teachers should be required to have at least one or two courses in linguistics. But, as we know, linguists who have tried to teach their discipline to teachers have generally found the experience to be less than rewarding. To do linguistics well, one needs to spend large amounts of time thinking and talking about language. To be a good teacher, one needs to spend a lot of time thinking and talking about children and how they learn. It's rare to find people who are committed to careers in teaching reaching the point of really caring about subjacency, or the details of binding theory, or competing theories of stress placement in the English Latinate vocabulary--and why should they? Teachers of linguistics have learned repeatedly that even the most elementary conceptual building blocks of lingustic thinking do not get assimilated early

or easily, especially on the part of people whose profession has given them a competing set of attitudes about language. Semesters can go by before some beginning linguistics students actually get the point about--

> the need to distinguish talk about the letters of the alphabet from talk about the sounds of speech,
>
> the claim of the arbitrariness in the relationship between an idea and its expression, an object and its name;
>
> the awesome complexity in the workings of everyday language, the artificiality of certain "rules" of prescriptive grammars.

The problem for non-linguists is that such notions do not come easily. It is a different way of thinking about things, and all of the arcane facts about language that students ordinarily have to get through in order to deal with matters that are of central concern to educators are so off-putting that they find themselves rejecting the whole enterprise as unnecessary to their concerns. They have no way of assessing the usefulness of what they are learning, and of sorting out what they ought to learn, and what they can safely ignore. What I think is needed are linguistics courses that are designed for educators--ones that deal with the kind of linguistic phenomena that are of major interest to them, and not courses that are designed for people whose interest is language itself. What educators need to learn is *not* how to do linguistics, but *how to think like linguists.* There is a big difference in doing this type of training, and doing the type that of training needed by linguists. That means that linguists who get involved in the training of educators ought to learn something about education. What is needed are linguists who really understand the educational issues but who think like linguists.

I will end with an example of educational training that would be useful for linguists. Not every linguist needs to learn about education, of course, but in addition to those who deal directly or indirectly with educational issues in their professional work, there are also linguists who plan to do field work with groups that speak languages without written forms. Perhaps in most linguists, there is a closet anthropologist, whose big dream is to spend a year in the bush doing "real" linguistic field work.

Many of those who do linguistic field research end up doing a certain amount of literacy development work. The devising of primers and other written texts for the sake of literacy training seems to be a natural thing for one to do in the bush. Many linguists have done this--most especially those attached to the Summer Institute of Linguistics (SIL) where the development of literacy materials is a major endeavor.

This often begins with the development or adoption of a written form of the language--a daunting job for the layman, but a familiar enough task for linguists. In order to study the language, they have to make detailed transcriptions of speech

samples--in phonemic transcription which can later be analyzed to discover the grammatical system of the language. But systems of transcription devised for purposes of linguistic analysis do not necessarily lend themselves to use in literacy materials. In doing a phonemic transcription, the linguist aims at unique representations of the way things sound. Hence, allomorphs of a given morpheme are transcribed as they are phonologically realized. In languages with fancy morphophonemic systems, one finds many realizations of a given morpheme. The problem with phonetic representations of such phenomena is that hardly anyone but trained linguists can read them since they can be "decoded" if one knows the international phonetic alphabet (IPA), but achieving anything like a fluent rate of reading using the IPA is not easy--especially if the "reader" is just learning how to read.

This is something that Michael Krauss has long argued, and that SIL linguists discovered long ago in their work. The problem is that ordinary people--especially novice readers--can only handle so much cognitive burden at a time, and the load involved in learning to read is mind-buckling in itself. In his discussion of the selection of an appropriate orthography for representing polysynthetic languages like Yupik, Krauss argues:

> "Judicious development of an orthography for Yupik therefore requires a relatively deeper understanding of the phonology through a continuum of morphophonemic levels, and then picking one's way through with a minimum of unavoidable inconsistencies and level-shifts, such that the orthography is an arbitrary but optimum compromise between surface phonetic and systematic phonological representation (one per morpheme). Another factor that must be kept in mind in the development of an orthography is the fact that a speaker's understanding of the phonology of his language deepens as he grows older. It probably takes at least ten years for the average speaker of English to progress in his phonology from what Bloomfield's six-year-old was supposed to know of his phonology to what is claimed in Chomsky and Halle's *Sound Pattern of English*. The Eskimo orthography is also a compromise, between what might be optimal for six-year-old learners and for adult learners. (Krauss, 1976, p. 203)

This piece of important advice is too often forgotten in the development of literacy materials. There are schools throughout rural Alaska with storehouses full of unused ethnic language educational materials that were lovingly written by linguists, but which have proven to be unusable by ordinary humans--like children. Linguists who are planning to do fieldwork ought to have some training in literacy development, in cognition, and the like. In order to deal with the cognitive considerations that figure in the design of usable literacy materials they need to understand the problem of reading as educators do.

In conclusion, educators need to acquire the attitude of linguists, but some linguists need to learn more about education. It can be concluded from these remarks that, yes, there is an

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important role for linguists in education, and I hope that more talented linguists will find their way into education. But to make a real contribution, they will first have to educate themselves about education.

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